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# Pressure ulcers – burns

## Lectures

CO23-001-e

### Future of cell therapy

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*Keywords:* Cell therapy; SVF; Adipose tissue; Platelet rich plasma

Cell therapies are meant to become one of the upcoming major advances in medicine. Regenerative therapy is an emerging field; which aim is to repair and restore lost or damaged tissue functions resulting from injuries, disease or aging. There are many different ways to perform cell therapy:

– cells are immediately available without modification; cells are immediately available with a slight modification;

– cells are cultivated, amplified and transformed; cells are modified by gene therapy.

Our present topic is focused only on cells therapies with minimal manipulation. We can use the differentiated cells such as platelets or use a set of cells composed of differentiated, progenitor and stem cells such as mononuclear cells of bone marrow, or stromal vascular fraction of adipose tissue.

We have analyzed published clinical trials using the criteria of evidence-based medicine, on:

– bone marrow cells because they are the most studied and used since the sixties;

– stromal vascular fraction of adipose tissue;

– platelet rich plasma.

If we want to obtain more predictable results it is necessary to qualify and quantify the biological product delivered, determine the effective dose for each indication, perform double blind multicentre clinical trial.

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CO23-002-e

### Computer simulations reveal the biomechanical efficacy of pressure ulcer protection technologies

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Pressure ulcers (PUs) tend to develop in individuals with mobility and sensation impairments when soft tissues are subjected to sustained deformations, particularly between a bony prominence and an external support such as a bed or a wheelchair. One of the most important guidelines for preventing PUs is to use a soft support surface under weight-bearing soft tissues, in order to better distribute mechanical loads at the contact as well as internally in the body. Here, we present utilization of MR-imaging-based computational simulations as a state-of-the-art methodology for revealing the mechanisms of action and for evaluating the efficacies of PU protection technologies in regulating soft tissue loads. The focus is on the supported buttocks and heels, which are the most susceptible sites for PUs in seated and supine patients. Specifically, we demonstrate how MRI-based computer modelling is able to provide quantitative and accurate, non-invasive and population-specific evaluation of deep tissue deformations and to reveal the quality of tissue protection provided by different technologies.

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### Surgical treatment of acute burns and post burn skin contractures: Consequences for scar management and rehabilitation

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*Keywords:* Burns; Surgery; Scar management; Rehabilitation

Different surgical procedures can be used for the treatment of acute burns. Split thickness skin grafts are used to treat acute burns, except in specific locations as eyelids. Dermal substitutes can be used in case of deep burn in functional areas, in order to ensure a better skin elasticity. Flaps are necessary when deep subcutaneous structures, as bone or tendons, are exposed. Amputations may be performed in some cases.

In reconstructive surgery of post burn skin contractures, full thickness skin grafts are preferentially performed, due to a better skin elasticity than split thickness skin grafts. Dermal substitutes can be used to remove and cover some scar contractures too large to be treated by full thickness skin grafts. Skin flaps are thicker and are able to grow in surface. Skin expansion provides the same skin as perilesionnal skin. Adipose graft reconstructs an adipose layer between skin and subcutaneous structures.

These different techniques provide different types of skin, in terms of adhesion to the subcutaneous tissues, skin thickness and elasticity, requiring adapted scar management and rehabilitation.

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### Organization of aftercare for patients with severe burn injuries in Belgium

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